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ments of the degree of or facility for interchange are indices of civilization. In a suggestive paper, "The Culture of the Nations" (*Bull. Amer. Geogr. Soc.*, Vol. 43, 1911), Jefferson selected four such indices to arrive at an estimate of world civilization, and on its basis he classified 69 countries into four cultural classes. The indices were schooling, commerce, development of railways, and use of the mail. With his conclusions, though based on statistics of earlier date, the latest available telephone statistics make interesting comparison (Telephone and Telegraph Statistics of the World, January 1, 1914, Amer. Telephone and Telegraph Company, New York City).

The fifteen countries ranked by Jefferson in the highest class all have a comparatively highly developed use of the telephone. All have 50 or more telephones to 10,000 population and most of them have over 150. Countries of the lowest culture, including all Africa except Egypt and the Union of South Africa and Asia except Japan and Asiatic Russia, have only 2 or less telephones per 10,000 inhabitants. Telephony also has made little headway in South American countries falling in the lowest rank—Bolivia, Peru, and Colombia with 10 per 10,000. At the other end of the scale in South America are Argentina and Uruguay. Uruguay has 100 telephones per 10,000 population, Argentina 90. In these two countries, unlike the remainder of the continent, the pure Indian element is practically non-existent.

Of greatest interest is the telephone distribution in the countries of the first rank. Most striking is the leadership of the United States, where internal commercial movement is also great. The United States has 970 telephones to the population unit. Canada is second with 650. Distribution in these countries may well be compared with Huntington's maps of the distribution of civilization and of human energy on the basis of climate ("Civilization and Climate," New Haven, 1915, p. 200). The first practical telephone was an American invention.

Besides Canada other British colonies with responsible government make a good showing in telephone usage. In these new countries, where other means of communication are not yet well developed, the telephone and telegraph assume special importance. The latter in particular figures with a high proportional development where there are great areas scantily populated. In this relative development of the telegraph Canada leads with 250 miles of wire to 10,000 population; New Zealand has 240 miles and Australia 220. The United States has 190 miles and Argentina, where the progress of colonization bears many resemblances to that of the Anglo-Saxon type, has 160 miles per population unit. All greatly exceed figures in Europe.

Turning to telephone statistics in Europe we find a surprisingly high development in the Scandinavian countries. Denmark has 450 telephones per 10,000 people; Sweden 410, Norway 340. Here are countries which are adapted both through race and geographic position to very high cultural rank. In Jefferson's scale, however, Norway and Sweden appear at the end of the first class. This is largely due to the comparatively feeble development of their railways, itself attributable to difficult physical conditions. On the contrary an enterprising and well-educated people is ready to take advantage of an appropriate means of communication. The progress of telephony has been closely followed by the Scandinavian countries. For several years Stockholm has led the world's cities in the number of telephones per capita: today the number per 10,000 population is 2,410, where for the twelve largest cities of the United States it is 1,130. In proportion to the figures for these northern countries the number for France, 80 per 10,000, seems remarkably low. Here, however, as in Great Britain, the employment of telephone service met considerable opposition from the well-developed telegraph systems. In France there is a higher proportional development of the latter than in any other European country.

## GEOGRAPHICAL NEWS

**Meteorological Bibliography.** Those who need to use current meteorological bibliographies will be interested to know that a change has been made in the bibliography regularly published in the *Quarterly Journal of the Royal Meteorological Society*. Beginning with the issue for January, 1917, the subject-headings and numbers used in the "International Catalogue of Scientific Literature" have been adopted. This is a distinct improvement over the method previously followed in this publication, which was purely alphabetical.

R. DEC. WARD.

## OBITUARY

DR. ROBERT BELL, associated with the Geological Survey of Canada since 1857 and its director from 1901 to 1906, died on June 18 at Rathwell, Manitoba, in his seventy-sixth year. For a period of over forty years he was actively engaged in the geological

exploration of Canada. His work dealt mainly with the Laurentian Plateau, that vast area of archaic rocks which surrounds Hudson Bay in the form of a horseshoe. The extent and wide distribution of the areas he examined, together with his habit of describing the broad, general features of a region, impart a high geographical value to his publications. The most important among these are: On the Geology of the Northwest Coast of Lake Superior and of the Nipigon District, *Rept. of Progress of the Geological Survey of Canada for 1866-69*, pp. 313-364, with a map, 1:253,440, embodying an original survey of Lake Nipigon; Report on an Exploration between James Bay and Lakes Superior and Huron, *ibid. for 1875-76*, pp. 294-342; Report on an Exploration of the East Coast of Hudson Bay, *ibid. for 1877-78*, pp. 1C-37C, with map, 1:253,440; Report on the Country between Lake Winnipeg and Hudson Bay, *ibid.*, pp. 1CC-31CC, with a map of the Nelson River, 1:506,880; Report on Explorations of the Churchill and Nelson Rivers, *ibid. for 1878-79*, pp. 1C-44C; Report on Hudson Bay and Some of the Lakes and Rivers Lying to the West of It, *ibid. for 1879-80*, pp. 1C-113C; Observations on the Geology, Mineralogy, Zoology, and Botany of Hudson Strait and Bay, *Annual Rept. Geol. Survey of Canada*, N. S., Vol. 1, 1885, pp. 1DD-20DD; Report of an Exploration of the Northern Side of Hudson Strait, *ibid.*, Vol. 11, 1898, pp. 1M-38M, with map of the coasts of Hudson Strait and Ungava Bay (with A. P. Low), 1:1,584,000. In the report for 1879-80 occurs a section on "The Northern Limits of the Principal Forest Trees of Canada East of the Rocky Mountains," with a map 1:5,068,800, a topic also treated in the article "The Geographical Distribution of Forest Trees in Canada," *Scott. Geogr. Mag.*, Vol. 13, 1897, pp. 281-296. A comprehensive paper on "The Labrador Peninsula" appeared in the same journal, Vol. 11, 1895, pp. 335-361. Dr. Bell's advocacy of the Hudson Bay route, based on his personal knowledge of conditions, is embodied in two papers read before the Geographical Section of the British Association for the Advancement of Science (reports, York meeting, 1881, p. 745, and Winnipeg meeting, 1909, p. 529), and in a pamphlet entitled "A New Route to Europe from the Interior of British North America," Montreal, 1881. The present consummation of this project was described by Mr. J. H. Cormie in the July number of the *Review* (pp. 26-40). Readers of Mr. F. J. Alcock's article on the Churchill River in the December, 1916, *Review*, will find pictures of the ruined Fort Prince of Wales, there described, in Dr. Bell's report for 1879-80. In 1907 Dr. Bell was awarded the Cullum Geographical Medal of this Society.

DR. ARNOLD HAGUE, the well-known geologist, died in Washington, D. C., on May 13, aged 77 years. During the early part of his career Dr. Hague was attached to the Fortieth Parallel Survey under Clarence King. With S. F. Emmons he contributed Volume 2 (Descriptive Geology, 1877) of the Final Reports. This and the accompanying volume on systematic geology by Clarence King have been referred to by De Margerie as still being the only work containing a connected discussion of Western tectonics (*Mem. Vol. Transcont. Exc. of 1912 of Amer. Geogr. Soc.*, 1915, p. 112). Other major works by Hague are: Geology of the Eureka District, Nevada, with an atlas, *U. S. Geol. Surv. Monogr. 20*, 1892, and, with others, Descriptive Geology, etc., of Yellowstone National Park, with atlas, *U. S. Geol. Surv. Monogr. 32*, Part II, 1899. A popular account appeared from his pen in 1912 (Dept. of the Interior) entitled "Geological History of the Yellowstone National Park."